

SEQUENCE LISTING

<110> Godfroi, Edmond
Bollen, Alex
Leboulle, Gerard

<120> IDENTIFICATION AND MOLECULAR CHARACTERIZATION OF
PROTEINS, EXPRESSED IN THE IXODES RICINUS SALIVARY
GLANDS

<130> VANM229.001CP1

<140>

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<150> PCT/BE00/00061

<151> 2000-06-06

<150> GB 9913425.6

<151> 1999-06-09

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<170> FastSEQ for Windows Version 3.0

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<212> DNA

<213> Ixodes ricinus

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cataagttaa accctgtcat tataagtgtg attgccgtat ctcggctgaa tgggttccat 180
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tcaaaatadc cgttccctga agatgaggga attacactga taatgacagg gtttgattta 180
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gta gac aca gcc aac cac aaa ggt aga ggg cgg cct gcg aag tgt aaa 96
 Val Asp Thr Ala Asn His Lys Gly Arg Gly Arg Pro Ala Lys Cys Lys
 20 25 30

ctt cct ccg gac gac gga cca tgc aga gca cga att ccg agt tac tac 144
 Leu Pro Pro Asp Asp Gly Pro Cys Arg Ala Arg Ile Pro Ser Tyr Tyr
 35 40 45

ttt gat aga aaa acc aaa acg tgc aag gag ttt atg tat ggc gga tgc 192
 Phe Asp Arg Lys Thr Lys Thr Cys Lys Glu Phe Met Tyr Gly Gly Cys
 50 55 60

gaa gga aac gaa aac aat ttt gaa aac ata act acg tgc caa gag gaa 240
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Leu Pro Pro Asp Asp Gly Pro Cys Arg Ala Arg Ile Pro Ser Tyr Tyr
 35 40 45

Phe Asp Arg Lys Thr Lys Thr Cys Lys Glu Phe Met Tyr Gly Gly Cys
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 65 70 75 80

Cys Arg Ala Lys Lys Val
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tccatttggga atcatagaaa catctttcag tttgaatatt gtagcgataa taatcgggtat 240
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atctcacgga tggatgtgtg acacttttat atctcagggt tgccgacatt gccattacag 180
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gcaccacatg cacttcaggc aatatgggtt 270

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<212> DNA
<213> Ixodes ricinus

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acgccaatag gggttctcgc aaagaacata tcatttggag gaaggcgtag tccgtcgaga 180
tatcccaaaa ctaggggtttc attgcgtgcg aaccaactgc cccacttct gtatgtgtac 240
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ggattacctc tcaaaa 316

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aatggctctg gtccctataa tagtcggata atgtagaaat cgctccatgt ggccaaatag 180
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 ccacccagtt tgaaagtgca agaacgcaca gtggtttacc gtaacaagta caccagagtt 180
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 aagaacgaga gccacatcgt accgtacctg gctatgatac tgactttgat aaatctgagg 300
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 gaggaggcta ccattcatgg attcacgcgg cacttgacgg gggtccttgc gacaagagaa 360
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 <212> DNA
 <213> Ixodes ricinus

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 catcctcgtc ttttaggatg actgccgcca tttgttttgt atcgtggtac aggtgtttgt 180
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 agataccctt ggaaatcttt cccgaagttc accttggtgt ggacagcaca tttgccaaag 360
 cttttaaatt tgacgtgtac aaagtaacgc gttacttcgc agtgcttaca aatgcggcta 420
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<210> 16
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 <212> DNA
 <213> Ixodes ricinus

<400> 16

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gct gga ggc aca gaa ccc cag atg tac aag ata cca gcg gaa atc tat				584
Ala Gly Gly Thr Glu Pro Gln Met Tyr Lys Ile Pro Ala Glu Ile Tyr	165	170	175	
ccc gaa gtt tac ctt gtg gcg gat agt gcc ttt gcc aaa gaa ttt aac				632
Pro Glu Val Tyr Leu Val Ala Asp Ser Ala Phe Ala Lys Glu Phe Asn	180	185	190	
ttt gat gtg aac gcc gtt acg cgt tac ttc gca gtg ctt aca aat gcg				680
Phe Asp Val Asn Ala Val Thr Arg Tyr Phe Ala Val Leu Thr Asn Ala	195	200	205	
gct aat ctt agg tat gaa agc ttc aaa tct cca aag gta cag ctc agg				728
Ala Asn Leu Arg Tyr Glu Ser Phe Lys Ser Pro Lys Val Gln Leu Arg	210	215	220	225
atc gtt ggc ata acg atg aac aaa aac cca gca gac gag cca tac att				776
Ile Val Gly Ile Thr Met Asn Lys Asn Pro Ala Asp Glu Pro Tyr Ile	230	235	240	
cac aat ata cgg gga tat gag cag tac cgg aat att ttg ttt aag gaa				824
His Asn Ile Arg Gly Tyr Glu Gln Tyr Arg Asn Ile Leu Phe Lys Glu	245	250	255	
aca ctg gag gat ttc aac act cag atg aag tca aaa cat ttt tat cgt				872
Thr Leu Glu Asp Phe Asn Thr Gln Met Lys Ser Lys His Phe Tyr Arg	260	265	270	
act gcc gat atc gtg ttt ctc gtg aca gca aaa aat atg tcc gaa tgg				920
Thr Ala Asp Ile Val Phe Leu Val Thr Ala Lys Asn Met Ser Glu Trp	275	280	285	
gtt ggt agc aca cta caa tca tgg act ggc ggg tac gct tac gta gga				968
Val Gly Ser Thr Leu Gln Ser Trp Thr Gly Gly Tyr Ala Tyr Val Gly	290	295	300	305
aca gcg tgt tcc gaa tgg aaa gta gga atg tgt gaa gac cga ccg aca				1016
Thr Ala Cys Ser Glu Trp Lys Val Gly Met Cys Glu Asp Arg Pro Thr	310	315	320	
agc tat tac gga gct tac gtt ttc gcc cat gag ctg gcg cat aat ttg				1064
Ser Tyr Tyr Gly Ala Tyr Val Phe Ala His Glu Leu Ala His Asn Leu	325	330	335	
ggt tgt caa cac gat gga gat ggt gcc aat agc tgg gtg aaa ggg cac				1112
Gly Cys Gln His Asp Gly Asp Gly Ala Asn Ser Trp Val Lys Gly His	340	345	350	
atc gga tct gcg gac tgc cca tgg gat gac gga tac ctt atg agc tac				1160
Ile Gly Ser Ala Asp Cys Pro Trp Asp Asp Gly Tyr Leu Met Ser Tyr	355	360	365	

1000
900
800
700
600
500
400
300
200
100
0

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Lys Met Glu Asp Glu Arg Gln Tyr Lys Phe Ser Pro Tyr Cys Gln Arg
370 375 380 385

gaa gtc agg aac ctc tac agg cgt ccg gaa ttc aaa tgc ctc act gaa 1256
Glu Val Arg Asn Leu Tyr Arg Arg Pro Glu Phe Lys Cys Leu Thr Glu
390 395 400

cga aaa gcg aaa aaa aca atc cgc tcg tct aag cta cct ggt gtg atg 1304
Arg Lys Ala Lys Lys Thr Ile Arg Ser Ser Lys Leu Pro Gly Val Met
405 410 415

aca tca tcg agc aac tat tgc cgg agg gtg tac atg tac gaa aaa ggc 1352
Thr Ser Ser Ser Asn Tyr Cys Arg Arg Val Tyr Met Tyr Glu Lys Gly
420 425 430

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Met His Ala Asp Glu Ala Tyr Gly Val Lys Asp Cys Arg Val Lys Cys
435 440 445

acc acc aca tca aga atg tat tgg cta ctc ggt gta gtc gac ggt aca 1448
Thr Thr Thr Ser Arg Met Tyr Trp Leu Leu Gly Val Val Asp Gly Thr
450 455 460 465

cct tgc gga aat gga aag gct tgc att ctt ggg aaa tgc agg aac aaa 1496
Pro Cys Gly Asn Gly Lys Ala Cys Ile Leu Gly Lys Cys Arg Asn Lys
470 475 480

atc aaa ata agc aag aag gac tgagaggttg ataatatcaa attaatacatg 1547
Ile Lys Ile Ser Lys Lys Asp
485

atatattcaac cacatgactt cgtgctcaac tggtagcccc aaataaattt taaaaaaaaat 1607

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atg 1670

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<212> PRT
<213> Ixodes ricinus

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35 40 45
Thr Leu Thr Leu Gln Lys Ser Lys Val Phe Ala Asp Asp Phe Leu Phe
50 55 60

Tyr Lys Met Glu Asp Glu Arg Gln Tyr Lys Phe Ser Pro Tyr Cys Gln
 370 375 380

Arg Glu Val Arg Asn Leu Tyr Arg Arg Pro Glu Phe Lys Cys Leu Thr
 385 390 395 400

Glu Arg Lys Ala Lys Lys Thr Ile Arg Ser Ser Lys Leu Pro Gly Val
 405 410 415

Met Thr Ser Ser Ser Asn Tyr Cys Arg Arg Val Tyr Met Tyr Glu Lys
 420 425 430

Gly Met His Ala Asp Glu Ala Tyr Gly Val Lys Asp Cys Arg Val Lys
 435 440 445

Cys Thr Thr Thr Ser Arg Met Tyr Trp Leu Leu Gly Val Val Asp Gly
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 465 470 475 480

Lys Ile Lys Ile Ser Lys Lys Asp
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Sequence

<210> 19
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 <213> Ixodes ricinus

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 attccaantg tctgaccgaa ccgcga 146

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<221> unsure

<222> (3)

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<221> unsure

<222> (10)

<223> A,C,T or G

<220>

<221> unsure

<222> (30)

<223> A,C,T or G

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<212> DNA

<213> Ixodes ricinus

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<212> DNA

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tgtgatatta magttcctag 140

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<211> 144

<212> DNA

<213> Ixodes ricinus

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tagcttccat cttctatcac ttga 144

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<212> DNA
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ccacattgaa aaaggatcca ag atg gag gca agt ctg agc aac cac atc ctt 172
Met Glu Ala Ser Leu Ser Asn His Ile Leu
1 5 10
aac ttc tcc gtc gac cta tac aag cag ctg aaa ccc tcc ggc aaa gac 220
Asn Phe Ser Val Asp Leu Tyr Lys Gln Leu Lys Pro Ser Gly Lys Asp
15 20 25
acg gca gga aac gtc ttc tgc tca cca ttc agt att gca gct gct ctg 268
Thr Ala Gly Asn Val Phe Cys Ser Pro Phe Ser Ile Ala Ala Ala Leu
30 35 40
tcc atg gcc ctc gca gga gct aga ggc aac act gcc aag caa atc gct 316
Ser Met Ala Leu Ala Gly Ala Arg Gly Asn Thr Ala Lys Gln Ile Ala
45 50 55
gcc atc ctg cac tca aac gac gac aag atc cac gac cac ttc tcc aac 364
Ala Ile Leu His Ser Asn Asp Asp Lys Ile His Asp His Phe Ser Asn
60 65 70
ttc ctt tgc aag ctt ccc agt tac gcc cca gat gtg gcc ctg cac atc 412
Phe Leu Cys Lys Leu Pro Ser Tyr Ala Pro Asp Val Ala Leu His Ile
75 80 85 90
gcc aat cgc atg tac tct gag cag acc ttc cat ccg aaa gcg gag tac 460
Ala Asn Arg Met Tyr Ser Glu Gln Thr Phe His Pro Lys Ala Glu Tyr
95 100 105
aca acc ctg ttg caa aag tcc tac gac agc acc atc aag gct gtt gac 508

Thr	Thr	Leu	Leu	Gln	Lys	Ser	Tyr	Asp	Ser	Thr	Ile	Lys	Ala	Val	Asp		
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Phe	Ala	Gly	Asn	Ala	Asp	Arg	Val	Arg	Leu	Glu	Val	Asn	Ala	Trp	Val		
		125					130					135					
gag	gaa	gtc	acc	agg	tca	aag	atc	agg	gac	ctg	ctc	gca	cct	gga	act	604	
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155						160				165					170		
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Gly	Leu	Trp	Asp	Ser	Gln	Phe	Lys	Pro	Ser	Ala	Thr	Lys	Pro	Gly	Asp		
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			190					195					200				
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Glu	Gly	Asp	Phe	Lys	Met	Gly	His	Cys	Ser	Asp	Leu	Lys	Val	Thr	Ala		
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Leu	Glu	Ile	Pro	Tyr	Lys	Gly	Asn	Lys	Thr	Ser	Met	Val	Ile	Leu	Leu		
		220				225					230						
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Pro	Glu	Asp	Val	Glu	Gly	Leu	Ser	Val	Leu	Glu	Glu	His	Leu	Thr	Ala		
235					240					245					250		
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Pro	Lys	Leu	Ser	Ala	Leu	Leu	Gly	Gly	Met	Tyr	Ala	Thr	Ser	Asp	Val		
				255				260						265			
aac	ttg	cgc	ttg	ccg	aag	ttc	aaa	cta	gag	cag	tcc	ata	ggg	ttg	aag	988	
Asn	Leu	Arg	Leu	Pro	Lys	Phe	Lys	Leu	Glu	Gln	Ser	Ile	Gly	Leu	Lys		
			270					275					280				
gat	gta	ctg	atg	gcg	atg	gga	gtc	aag	gat	ttc	ttc	acg	tcc	ctt	gca	1036	
Asp	Val	Leu	Met	Ala	Met	Gly	Val	Lys	Asp	Phe	Phe	Thr	Ser	Leu	Ala		
			285				290					295					
gat	ctt	tct	ggc	atc	agc	gct	gcg	ggg	aat	ctg	tgc	gct	tcg	gat	gtc	1084	
Asp	Leu	Ser	Gly	Ile	Ser	Ala	Ala	Gly	Asn	Leu	Cys	Ala	Ser	Asp	Val		
		300				305					310						
atc	cac	aag	gct	ttt	gtg	gaa	gtt	aat	gag	gag	ggc	aca	gag	gct	gca	1132	
Ile	His	Lys	Ala	Phe	Val	Glu	Val	Asn	Glu	Glu	Gly	Thr	Glu	Ala	Ala		
					320					325					330		
gct	gcc	act	gcc	ata	ccc	att	atg	ttg	atg	tgt	gcg	aga	ttt	cca	cag	1180	
Ala	Ala	Thr	Ala	Ile	Pro	Ile	Met	Leu	Met	Cys	Ala	Arg	Phe	Pro	Gln		

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gtg gtg aac ttt ttc gtt gac cgc cca ttc atg ttc ttg atc cac agc 1228
 Val Val Asn Phe Phe Val Asp Arg Pro Phe Met Phe Leu Ile His Ser
 350 355 360

cat gat cca gat gtt gtt ctc ttc atg gga tcc atc cgt gag ctc 1273
 His Asp Pro Asp Val Val Leu Phe Met Gly Ser Ile Arg Glu Leu
 365 370 375

taaaaagcat attcttaacg gcggccaatc agtctgtgga gttatctctt agtcactaat 1333

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<213> Ixodes ricinus

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Tyr Lys Gln Leu Lys Pro Ser Gly Lys Asp Thr Ala Gly Asn Val Phe
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Cys Ser Pro Phe Ser Ile Ala Ala Ala Leu Ser Met Ala Leu Ala Gly
 35 40 45

Ala Arg Gly Asn Thr Ala Lys Gln Ile Ala Ala Ile Leu His Ser Asn
 50 55 60

Asp Asp Lys Ile His Asp His Phe Ser Asn Phe Leu Cys Lys Leu Pro
 65 70 75 80

Ser Tyr Ala Pro Asp Val Ala Leu His Ile Ala Asn Arg Met Tyr Ser
 85 90 95

Glu Gln Thr Phe His Pro Lys Ala Glu Tyr Thr Thr Leu Leu Gln Lys
 100 105 110

Ser Tyr Asp Ser Thr Ile Lys Ala Val Asp Phe Ala Gly Asn Ala Asp
 115 120 125

Arg Val Arg Leu Glu Val Asn Ala Trp Val Glu Glu Val Thr Arg Ser
 130 135 140

Lys Ile Arg Asp Leu Leu Ala Pro Gly Thr Val Asp Ser Ser Thr Ser
 145 150 155 160

Leu Ile Leu Val Asn Ala Ile Tyr Phe Lys Gly Leu Trp Asp Ser Gln
 165 170 175

Phe Lys Pro Ser Ala Thr Lys Pro Gly Asp Phe His Leu Thr Pro Gln

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Thr	Ser	Lys	Lys	Val	Asp	Met	Met	His	Gln	Glu	Gly	Asp	Phe	Lys	Met
		195					200					205			
Gly	His	Cys	Ser	Asp	Leu	Lys	Val	Thr	Ala	Leu	Glu	Ile	Pro	Tyr	Lys
	210					215					220				
Gly	Asn	Lys	Thr	Ser	Met	Val	Ile	Leu	Leu	Pro	Glu	Asp	Val	Glu	Gly
225					230					235					240
Leu	Ser	Val	Leu	Glu	Glu	His	Leu	Thr	Ala	Pro	Lys	Leu	Ser	Ala	Leu
				245					250					255	
Leu	Gly	Gly	Met	Tyr	Ala	Thr	Ser	Asp	Val	Asn	Leu	Arg	Leu	Pro	Lys
			260					265					270		
Phe	Lys	Leu	Glu	Gln	Ser	Ile	Gly	Leu	Lys	Asp	Val	Leu	Met	Ala	Met
		275					280					285			
Gly	Val	Lys	Asp	Phe	Phe	Thr	Ser	Leu	Ala	Asp	Leu	Ser	Gly	Ile	Ser
	290					295					300				
Ala	Ala	Gly	Asn	Leu	Cys	Ala	Ser	Asp	Val	Ile	His	Lys	Ala	Phe	Val
305					310					315					320
Glu	Val	Asn	Glu	Glu	Gly	Thr	Glu	Ala	Ala	Ala	Ala	Thr	Ala	Ile	Pro
				325				330						335	
Ile	Met	Leu	Met	Cys	Ala	Arg	Phe	Pro	Gln	Val	Val	Asn	Phe	Phe	Val
			340					345					350		
Asp	Arg	Pro	Phe	Met	Phe	Leu	Ile	His	Ser	His	Asp	Pro	Asp	Val	Val
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agtgcgtgga ccggataaac gaaagtacac gtttctacgc aacattctca ccttacaacg 180
gagagtgaga gtttagcaaaa caatgattga gctcgtacgg aacatgtcct gtaggacatt 240
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tattccagaa gtacaccggt tccggatggg gtgaatgttg tataacggct gctgggtgcg 180
gaagactatg atggattacg caaaaaagtt ctaaacgagt tgtttcccat cccggaaagt 240
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ttttaagcaa gacttgatat ttagatcgat atcctcctgt tgtccgtctt gattaatcgg 180
ctcttttaggg tttttagaat aggcttttcg gtacgag atg ccc aaa gga aag agg 235
Met Pro Lys Gly Lys Arg
1 5
gga ccc aaa gca ggt ggc gcc gcg cgc ggt ggc cgg tgc gag gcc agc 283
Gly Pro Lys Ala Gly Gly Ala Ala Arg Gly Gly Arg Cys Glu Ala Ser
10 15 20
ctg gct ccg tcg tcc agc gac gag gag tcc aac gca gac acg gcg agc 331
Leu Ala Pro Ser Ser Ser Asp Glu Glu Ser Asn Ala Asp Thr Ala Ser
25 30 35
gtg ctg agc tgc gcc tcg gag tct cgc tgt ggc agt gac ggc acc gtt 379
Val Leu Ser Cys Ala Ser Glu Ser Arg Cys Gly Ser Asp Gly Thr Val

40	45	50	
gga gac cca gaa gcg gag gag gct gtg ctg cat gac gac ttt gaa gac			427
Gly Asp Pro Glu Ala Glu Glu Ala Val Leu His Asp Asp Phe Glu Asp			
55	60	65	70
aaa ctc aag gag gcc atc gac gga gct tcg cag aag agt gcc aaa gga			475
Lys Leu Lys Glu Ala Ile Asp Gly Ala Ser Gln Lys Ser Ala Lys Gly			
	75	80	85
cgg ctg tcg tgc ctg gag gcg att cgc aag gcc ttt tcc acc aaa tac			523
Arg Leu Ser Cys Leu Glu Ala Ile Arg Lys Ala Phe Ser Thr Lys Tyr			
	90	95	100
ctg tac gac ttc ctc atg gac aga ccg agc acg gtg tgc gac ctg gtg			571
Leu Tyr Asp Phe Leu Met Asp Arg Pro Ser Thr Val Cys Asp Leu Val			
	105	110	115
gag cgt ggg gtg cgc aag ggc cga ggg gag gag gcg gcc ctg tgc gcc			619
Glu Arg Gly Val Arg Lys Gly Arg Gly Glu Glu Ala Ala Leu Cys Ala			
	120	125	130
act ctc ggg gcc ctg gcc tgc gtc cag ctc ggg gtc ggg gcc gag gcg			667
Thr Leu Gly Ala Leu Ala Cys Val Gln Leu Gly Val Gly Ala Glu Ala			
	135	140	145
gac gcc ctg ttc gac gcc ctg cgc cag ccg ctc tgc act ttg ctg ctt			715
Asp Ala Leu Phe Asp Ala Leu Arg Gln Pro Leu Cys Thr Leu Leu Leu			
	155	160	165
gac ggg gcc cag ggg ccc tcc ccc agg gcc agg tgt gcc act gcc ctc			763
Asp Gly Ala Gln Gly Pro Ser Pro Arg Ala Arg Cys Ala Thr Ala Leu			
	170	175	180
ggc ctc tgc tgc ttc gtg gtg gac tcg gac aac cag ctg gtg ctg cag			811
Gly Leu Cys Cys Phe Val Val Asp Ser Asp Asn Gln Leu Val Leu Gln			
	185	190	195
ccg tgc atg gag gtg ctc tgg cag gtg gtg ggt gcc aag gcg ggc ccc			859
Pro Cys Met Glu Val Leu Trp Gln Val Val Gly Ala Lys Ala Gly Pro			
	200	205	210
ggc tct ccg gtg ctc cag gca gcg gcc ctg ctc gcc tgg ggc ctc ctg			907
Gly Ser Pro Val Leu Gln Ala Ala Ala Leu Leu Ala Trp Gly Leu Leu			
	215	220	225
ctc agc gtg gct ccc gtc gac cgc ctg ctg gcg ctc acg cgc acg cac			955
Leu Ser Val Ala Pro Val Asp Arg Leu Leu Ala Leu Thr Arg Thr His			
	235	240	245
ctg ccc cgg ctg cag gag ctg ctg gag agc ccc gac ctg gac ctg cgc			1003
Leu Pro Arg Leu Gln Glu Leu Leu Glu Ser Pro Asp Leu Asp Leu Arg			
	250	255	260
att gcg gcc ggg gag gtg atc gcc gtc atg tac gag ggg gcc agg gac			1051
Ile Ala Ala Gly Glu Val Ile Ala Val Met Tyr Glu Gly Ala Arg Asp			
	265	270	275

tac gac gag gac ttt gag gag ccc tcg gag tcc ctg tgt gcc cag ctg	1099
Tyr Asp Glu Asp Phe Glu Glu Pro Ser Glu Ser Leu Cys Ala Gln Leu	
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cgc cag ctg gcc acg gac agc cag aag ttt cgg gcc aag aag gag cgg	1147
Arg Gln Leu Ala Thr Asp Ser Gln Lys Phe Arg Ala Lys Lys Glu Arg	
295 300 305 310	
cgc cag cag cgc tcc acc ttc agg gac gtc tac cgg gcc gtc agg gag	1195
Arg Gln Gln Arg Ser Thr Phe Arg Asp Val Tyr Arg Ala Val Arg Glu	
315 320 325	
ggg gcc tct ccc gac gtg agc gtc aag ttt ggc cgg gaa gtc ctg gaa	1243
Gly Ala Ser Pro Asp Val Ser Val Lys Phe Gly Arg Glu Val Leu Glu	
330 335 340	
ctg gac acc tgg agt cgc aag ctg cag tac gac gct ttc tgc cag ctg	1291
Leu Asp Thr Trp Ser Arg Lys Leu Gln Tyr Asp Ala Phe Cys Gln Leu	
345 350 355	
ctg ggc tcc ggc atg aac ctg cac ctg gcc gtg aac gag ctg ctg agg	1339
Leu Gly Ser Gly Met Asn Leu His Leu Ala Val Asn Glu Leu Leu Arg	
360 365 370	
gac atc ttt gaa ctg ggg cag gtg ctg gca acc gag gac cac att atc	1387
Asp Ile Phe Glu Leu Gly Gln Val Leu Ala Thr Glu Asp His Ile Ile	
375 380 385 390	
tcc aag atc acc aag ttc gaa agg cac atg gtg aac atg gcc agc tgc	1435
Ser Lys Ile Thr Lys Phe Glu Arg His Met Val Asn Met Ala Ser Cys	
395 400 405	
cgg gcc cgc acc aag aca cgc aac cgg ctg agg gac aag cgc gcc gac	1483
Arg Ala Arg Thr Lys Thr Arg Asn Arg Leu Arg Asp Lys Arg Ala Asp	
410 415 420	
gtg gtc gcc tgaacctgcg gagggatgct tagctatgca ctgcgccgcc	1532
Val Val Ala	
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taccctggcg ggactcgatg ccactcacga gtcggcgctc gcaaattcgc cgcccatcgt	1592
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 35 40 45
 Gly Ser Asp Gly Thr Val Gly Asp Pro Glu Ala Glu Glu Ala Val Leu
 50 55 60
 His Asp Asp Phe Glu Asp Lys Leu Lys Glu Ala Ile Asp Gly Ala Ser
 65 70 75 80
 Gln Lys Ser Ala Lys Gly Arg Leu Ser Cys Leu Glu Ala Ile Arg Lys
 85 90 95
 Ala Phe Ser Thr Lys Tyr Leu Tyr Asp Phe Leu Met Asp Arg Pro Ser
 100 105 110
 Thr Val Cys Asp Leu Val Glu Arg Gly Val Arg Lys Gly Arg Gly Glu
 115 120 125
 Glu Ala Ala Leu Cys Ala Thr Leu Gly Ala Leu Ala Cys Val Gln Leu
 130 135 140
 Gly Val Gly Ala Glu Ala Asp Ala Leu Phe Asp Ala Leu Arg Gln Pro
 145 150 155 160
 Leu Cys Thr Leu Leu Leu Asp Gly Ala Gln Gly Pro Ser Pro Arg Ala
 165 170 175
 Arg Cys Ala Thr Ala Leu Gly Leu Cys Cys Phe Val Val Asp Ser Asp
 180 185 190

Asn	Gln	Leu	Val	Leu	Gln	Pro	Cys	Met	Glu	Val	Leu	Trp	Gln	Val	Val	
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Leu	Ala	Trp	Gly	Leu	Leu	Leu	Ser	Val	Ala	Pro	Val	Asp	Arg	Leu	Leu	
		225			230					235					240	
Ala	Leu	Thr	Arg	Thr	His	Leu	Pro	Arg	Leu	Gln	Glu	Leu	Leu	Glu	Ser	
				245					250					255		
Pro	Asp	Leu	Asp	Leu	Arg	Ile	Ala	Ala	Gly	Glu	Val	Ile	Ala	Val	Met	
			260				265						270			
Tyr	Glu	Gly	Ala	Arg	Asp	Tyr	Asp	Glu	Asp	Phe	Glu	Glu	Pro	Ser	Glu	
		275				280						285				
Ser	Leu	Cys	Ala	Gln	Leu	Arg	Gln	Leu	Ala	Thr	Asp	Ser	Gln	Lys	Phe	
		290				295					300					
Arg	Ala	Lys	Lys	Glu	Arg	Arg	Gln	Gln	Arg	Ser	Thr	Phe	Arg	Asp	Val	
					310					315					320	
Tyr	Arg	Ala	Val	Arg	Glu	Gly	Ala	Ser	Pro	Asp	Val	Ser	Val	Lys	Phe	
				325					330					335		
Gly	Arg	Glu	Val	Leu	Glu	Leu	Asp	Thr	Trp	Ser	Arg	Lys	Leu	Gln	Tyr	
			340					345					350			
Asp	Ala	Phe	Cys	Gln	Leu	Leu	Gly	Ser	Gly	Met	Asn	Leu	His	Leu	Ala	
			355				360					365				
Val	Asn	Glu	Leu	Leu	Arg	Asp	Ile	Phe	Glu	Leu	Gly	Gln	Val	Leu	Ala	
			370			375					380					
Thr	Glu	Asp	His	Ile	Ile	Ser	Lys	Ile	Thr	Lys	Phe	Glu	Arg	His	Met	
				390						395					400	
Val	Asn	Met	Ala	Ser	Cys	Arg	Ala	Arg	Thr	Lys	Thr	Arg	Asn	Arg	Leu	
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Arg	Asp	Lys	Arg	Ala	Asp	Val	Val	Ala								
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Ser Gly Leu Gly Tyr Gly His Ala Val Gly Leu Gly His Gly Phe Gly
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Lys

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